

INSTALLATION MANUAL MANUAL DE INSTALACIÓN MANUALE D'INSTALLAZIONE MANUAL DE INSTALAÇÃO MANUEL D'INSTALLATION INSTALLATIONS-HANDBUCH

Indoor Unit	Outdoor Unit	Indoor Unit	Outdoor Unit
AQ07A1(A2)VE	UQ07A1(A2)VE	ASH070VE/D	AXH070VE/D
AQ09A1(A2)VE/B	UQ09A1(A2)VE/B	ASH090VE/D	AXH090VE/D
AQ12A1(A2)VE/B	UQ12A1(A2)VE/B	ASH120VE/D	AXH120VE/D
SH07YA0	SH07YA0X	ASH071VE/D	AXH071VE/D
SH09YA0	SH09YA0X	ASH091VE/D	AXH091VE/D
SH12YA0	SH12YA0X	ASH121VE/D	AXH121VE/D
SH07YAA(B)	SH07YAA(B)X	ASH074VE/D	AXH074VE/D
SH09YAA(B)	SH09YAA(B)X	ASH094VE/D	AXH094VE/D
SH12YAA(B)	SH12YAA(B)X	ASH124VE/D	AXH124VE/D
SH09ZV	XSH09ZV	ASH075VE/D	AXH075VE/D
SH12ZV	XSH12ZV	ASH095VE/D	AXH095VE/D
		ASH125VE/D	AXH125VE/D

Split-type Room Air Conditioner (Cool and Heat)

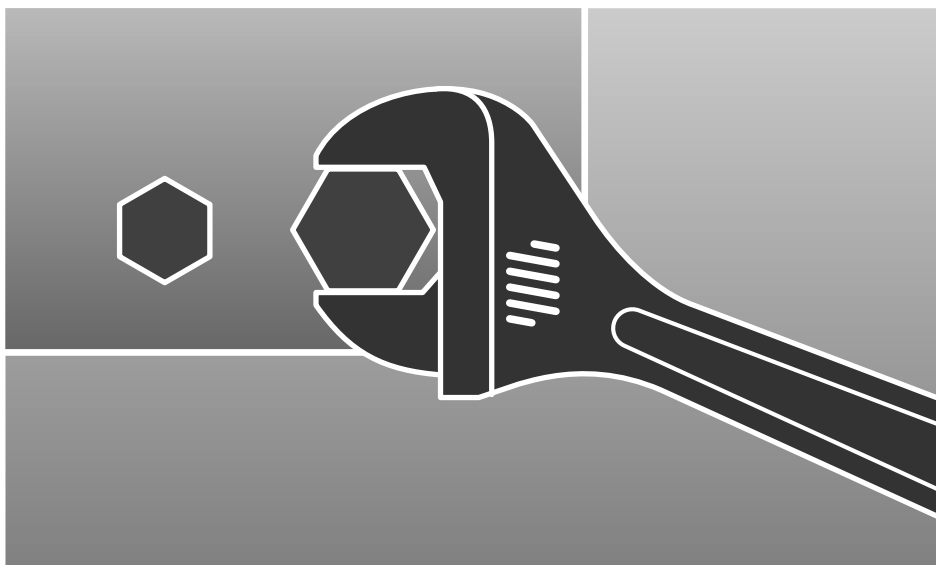
Aire acondicionado doméstico sistema Split (Refrigeración y Calefacción)

Condizionatore d'aria per ambienti ad unità Separate (Raffreddamento e Riscaldamento)

Aparelho de ar condicionado tipo Split (Refrigeração e Aquecimento)

Climatiseur de type Séparé (Refroidissement et Chauffage)

Geteilte raumklimaanlage (Kühlen und Wärmen)



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Deciding on Where to Install the Air Conditioner

When deciding on the location of the air conditioner with the owner, the following restrictions must be taken into account.

General

Do NOT install the air conditioner in a location where it will come into contact with the following elements:

- ◆ Combustible gases
- ◆ Saline air
- ◆ Machine oil
- ◆ Sulphide gas
- ◆ Special environmental conditions

If you must install the unit in such conditions, first consult your dealer.

Indoor Unit

- ◆ There must be no obstacles near the air inlet and outlet.
- ◆ Install the indoor unit on a surface that can support its weight.
- ◆ Choose a position that enables the piping and cables to be easily connected to the outdoor unit and the recommended length of 5 metres to be respected.
- ◆ Leave enough clearance beneath the indoor unit to enable the filters to be removed without hindrance.
- ◆ Maintain sufficient clearance around the indoor unit, as indicated in the diagram on the page opposite.
- ◆ Make sure that the water dripping from the drain hose runs away correctly and safely.

Outdoor Unit

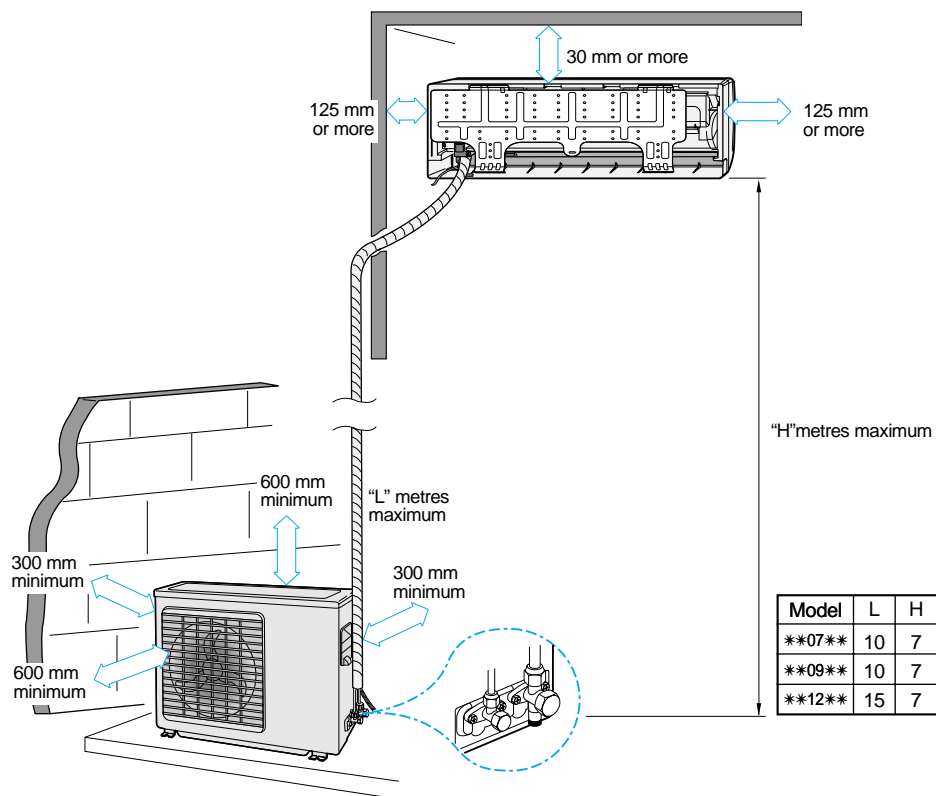
- ◆ The outdoor unit must NEVER be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.
- ◆ Choose a location that is dry and sunny, but not exposed to direct sunlight or strong winds.
- ◆ Do not block any passageways or thoroughfares.
- ◆ Choose a location where the noise of the air conditioner when running and the discharged air do not disturb any neighbours.
- ◆ Choose a position that enables the piping and cables to be easily connected to the indoor unit and the recommended length of 5 metres to be respected.
- ◆ Install the outdoor unit on a flat, stable surface that can support its weight and does not generate any unnecessary noise and vibration.
- ◆ Position the outdoor unit so that the air flow is directed towards the outside, as indicated by the arrows on the top of the unit.
- ◆ Maintain sufficient clearance around the outdoor unit, as indicated in the diagram on the page opposite.
- ◆ If the outdoor unit is installed at a height, ensure that its base is firmly fixed in position; the maximum height ("H": indicated in the diagram on the page opposite.) is 7 metres.
- ◆ Make sure that the water dripping from the drain hose runs away correctly and safely.

CAUTION

- ◆ ***You have just purchased a split-type room air conditioner and it has been installed by your installation specialist.***
- ◆ ***This device must be installed according to the national electrical rules.***

Deciding on Where to Install the Air Conditioner(cont.)

Respect the clearances and maximum lengths indicated in the diagram below when installing the unit.

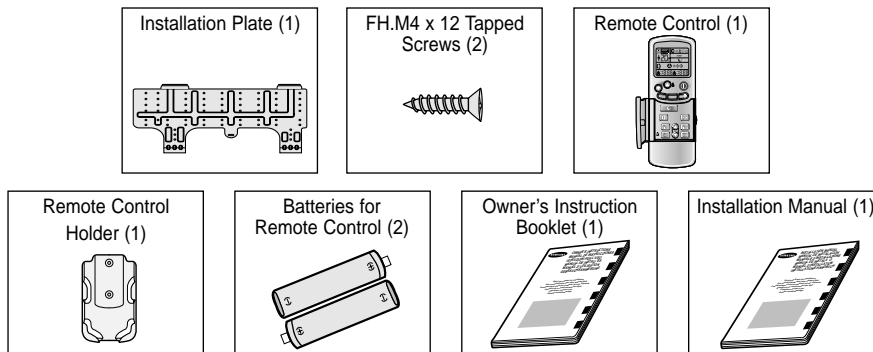


Air Conditioner and Accessories

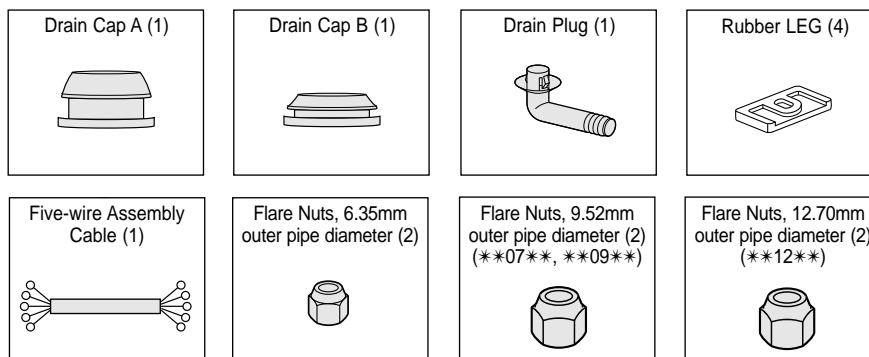
The following accessories are supplied with the air conditioner.

- **The quantities are indicated in parentheses.**

Accessories in the Indoor Unit Case

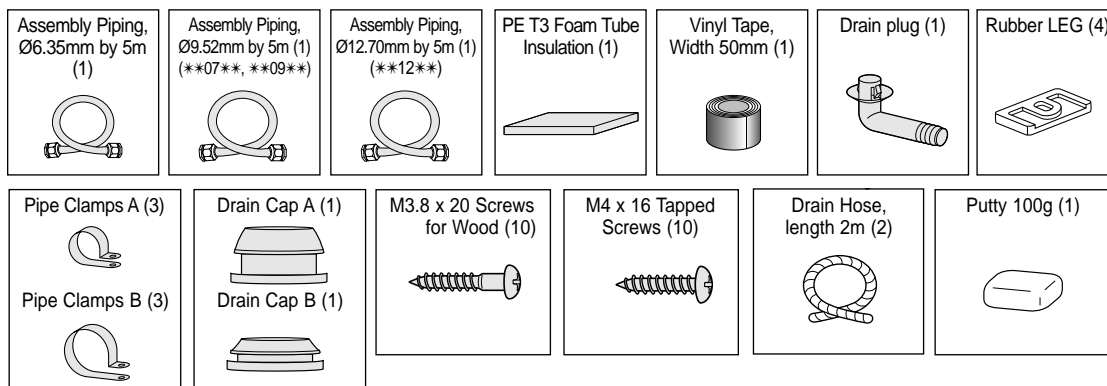


Accessories in the Outdoor Unit Case



- **The five-wire assembly cable is depending on the option. [If they are not supplied, Using the standard cable.(above 1.0mm²/area or approved according to IEC standard.)]**
- **The flare nuts, drain plug, drain cap A/B and rubber leg are only included when the air conditioner is supplied without the assembly piping illustrated below.**

The following connection accessories may be supplied, depending on the option. If they are not supplied, it is recommended that you collect them together before starting to install the air conditioner.



- **If these accessories are supplied, they are located in the accessory box.**

Fixing the Installation Plate

Before fixing the installation plate to a wall or window frame, you must determine the position of the 65 mm hole through which the cable, piping and hose pass to connect the indoor unit up to the outdoor unit. When facing the air conditioner in position on the wall, the piping and cable can be connected from the:

- ◆ **Right**
- ◆ **Left**
- ◆ **Underside**
- ◆ **Rear (right or left)**

1 Determine the position of the pipe and drain hose hole using the right figure and drill the hole with an inner diameter of 65 mm so that it slants slightly downwards.

2 **If you are fixing the indoor unit to a... Then follow Steps...**

Wall

3.

Window frame

4 to 6.

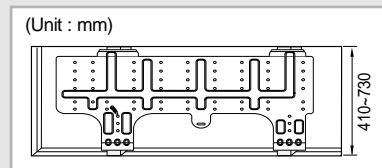
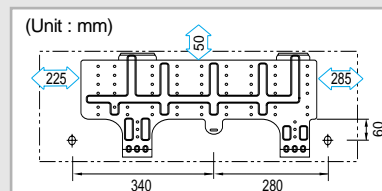
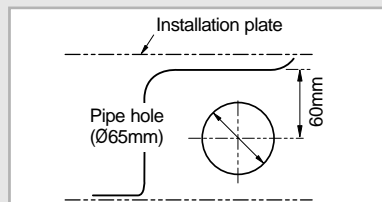
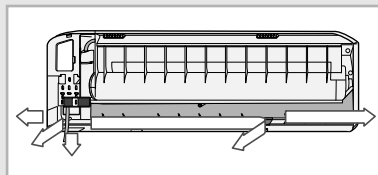
3 Fix the installation plate to the wall in a manner appropriate to the weight of the indoor unit.

- If you are mounting the plate on a concrete wall with anchor bolts, the anchor bolts must not project by more than 20 mm.

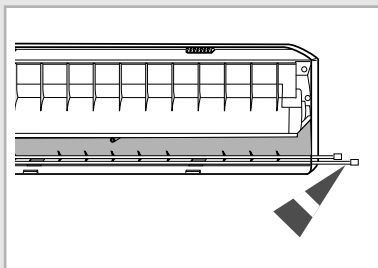
4 Determine the positions of the wooden uprights to be attached to the window frame.

5 Attach the wooden uprights to the window frame in a manner appropriate to the weight of the indoor unit.

6 Using tapped screws, attach the installation plate to the wooden uprights, as illustrated in the last figure opposite.



Purging the Unit



On delivery, the indoor unit is loaded with an inert gas. All this gas must therefore be purged before connecting the assembly piping. To purge the inert gas, proceed as follows.

Unscrew the caps at the end of each pipe.

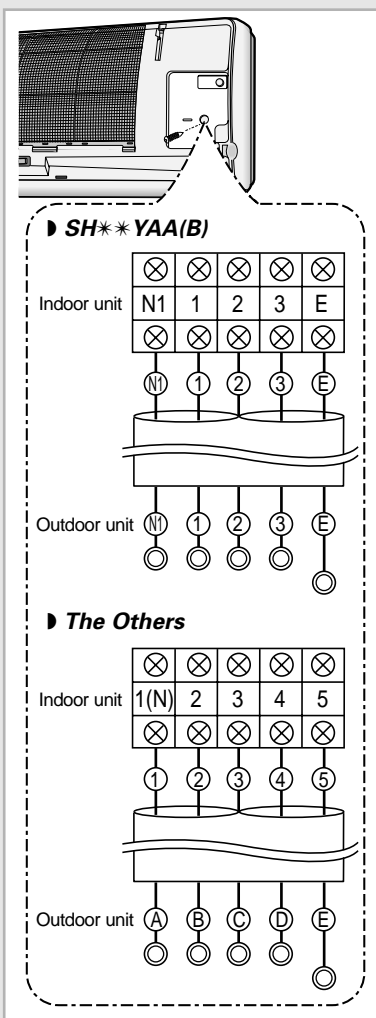
Result: All inert gas escapes from the indoor unit.

➤ **To prevent dirt or foreign objects from getting into the pipes during installation, do NOT remove the caps completely until you are ready to connect the piping.**

Connecting the Assembly Cable

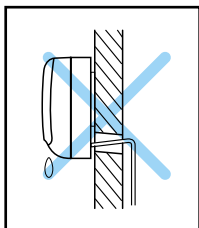
The outdoor unit is powered from the indoor unit via the assembly cable. If the outdoor unit is more than five metres away from the indoor unit, the cable must first be extended to a maximum of 10(15) metres.

- 1 Extend the assembly cable if necessary.
- 2 Open the front grille by pulling on the tabs on the lower right and left sides of the indoor unit.
- 3 Remove the screw securing the connector cover.
- 4 Pass the assembly cable through the rear of the indoor unit and connect the assembly cable to terminals.
 - Each wire is labelled with the corresponding terminal number.
- 5 Pass the other end of the cable through the 65 mm hole in the wall.
- 6 Replace the connector cover, carefully tightening the screw.
- 7 Close the front grille.
- 8 For further details on how to plug the other end of the assembly cable into the outdoor unit, refer to page 12.

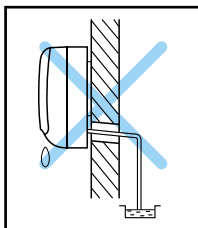


Installing and Connecting the Indoor Unit Drain Hose

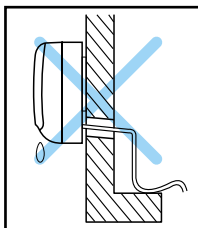
Care must be taken when installing the drain hose for the indoor unit to ensure that any condensation water is correctly drained outside. When passing the drain hose through the 65 mm hole drilled in the wall, check that none of the following situations occur.



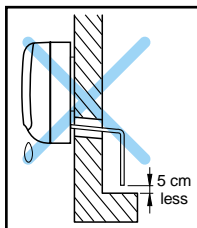
The hose must NOT slope upwards.



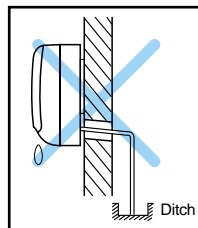
The end of the drain hose must NOT be placed in water.



Do NOT bend the hose in different directions.



Keep a clearance of at least 5 cm between the end of the hose and the ground.

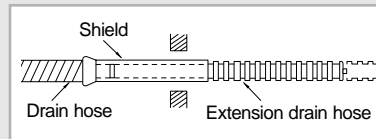


Do NOT place the end of the drain hose in a hollow.

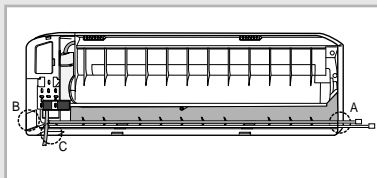
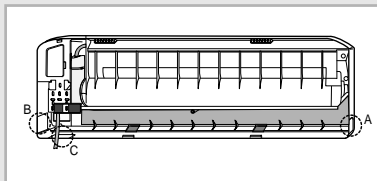
To install the drain hose, proceed as follows.

- 1 If necessary, connect the 2-metre extension to the drain hose.
- 2 If you are using the extension, insulate the inside part of the extension drain hose with a shield.
- 3 Pass the drain hose under the refrigerant piping, taking care to keep the drain hose tight.
- 4 Pass the drain hose through the hole in the wall, making sure that it is sloping downwards, as shown in the illustrations above.

➤ **The hose will be fixed permanently into position once the whole installation has been tested for gas leaks; refer to page 16 for further details.**



Installing and Connecting the Indoor Unit Assembly Piping



There are two refrigerant pipes of different diameters:

- ◆ **A smaller one for the liquid refrigerant**
- ◆ **A larger one for the gas refrigerant**

A short length of piping is already fitted to the air conditioner. You must extend this piping using assembly piping (optionally supplied).

The connection procedure for the refrigerant piping varies according to the exit position of the piping from the indoor unit, as seen when facing the air conditioner in position on the wall:

- ◆ **Right (A)**
- ◆ **Left (B)**
- ◆ **Underside (C)**
- ◆ **Rear**

- 1 With a knife, cut out the appropriate knock-out piece on the rear of the indoor unit (unless you are connecting directly from the rear).
- 2 Smooth the cut edges.
- 3 Remove the protection caps on the pipes and connect the assembly piping to each pipe, tightening the nuts, first manually and then with a wrench, applying the following torque.

Pipe	Outer Diameter	Torque (kg•cm)
Liquid refrigerant	6.35 mm	160
Gas refrigerant	9.52 mm	300
Gas refrigerant	12.70 mm	500

➤ If the piping must be shortened or extended, refer to page 11.

- 4 Cut off any excess foam insulation.
- 5 If necessary, bend the pipe round, along the bottom of the indoor unit and out through the appropriate hole, taking care to ensure that:
 - ◆ The piping does not jut out from the rear of the indoor unit
 - ◆ The bending radius is 100 mm or more
- 6 Pass the piping through the hole in the wall.
- 7 For further details on how to connect up to the outdoor unit and purge the circuit, refer to page 15.

➤ **The piping will be insulated and fixed permanently into position once the whole installation has been tested for gas leaks; refer to page 16 for further details.**

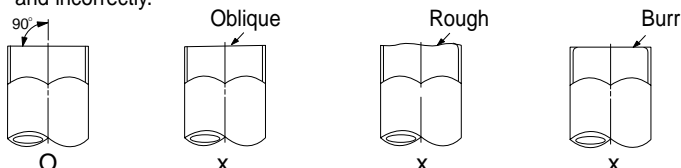
Cutting/Extending the Piping

**Five metres of piping is supplied with the air conditioner(Optional).
This length can if necessary be:**

- ◆ **Extended to a maximum of 10(15) metres**
- ◆ **Shortened as required**
- ✦ **If more than five metres of piping is required:**
 - ◆ **The assembly cable must also be extended**
 - ◆ **Refrigerant must be added to the circuit by an approved installer; otherwise, the indoor unit may freeze**

1 Make sure that you have the required tools available (pipe cutter, reamer, flaring tool and pipe holder).

2 If you wish to shorten the piping, cut it using a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe, and referring to the illustrations below for examples of edges cut correctly and incorrectly.

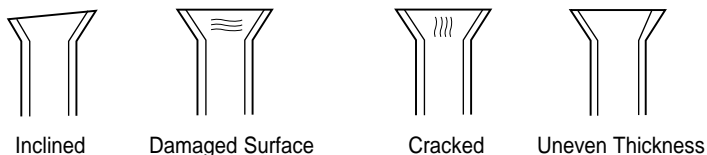


3 To prevent any gas from leaking out, remove all burrs at the cut end of the pipe, using a reamer.

4 Slide a flare nut on to the pipe and modify the flare.

Pipe	Outer Diameter (D)	Depth (A)
Liquid refrigerant	6.35 mm	1.3 mm
Gas refrigerant	9.52 mm	1.8 mm
Gas refrigerant	12.70 mm	2.0 mm

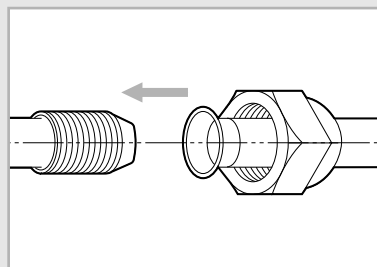
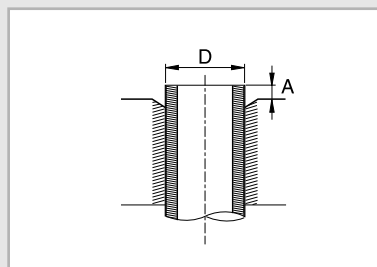
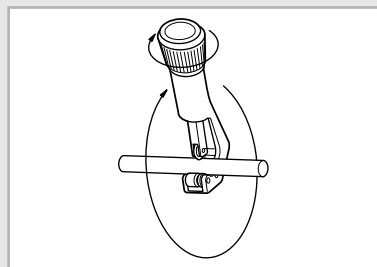
5 Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



6 Align the pipes to be connected and tighten the flare nuts first manually and then with a wrench, applying the following torque.

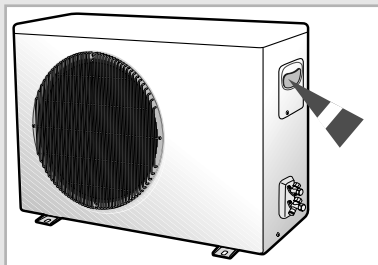
Pipe	Outer Diameter	Torque (kg·cm)
Liquid refrigerant	6.35 mm	160
Gas refrigerant	9.52 mm	300
Gas refrigerant	12.70 mm	500

7 For further details on how to connect up to the outdoor unit and purge the circuit, refer to page 15.

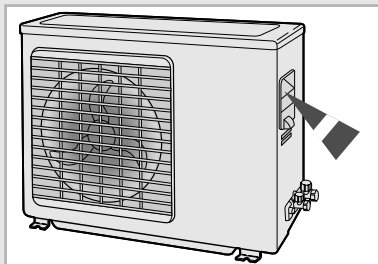


Connecting the Cables to the Outdoor Unit

► SH**YAA(B)



► The Others

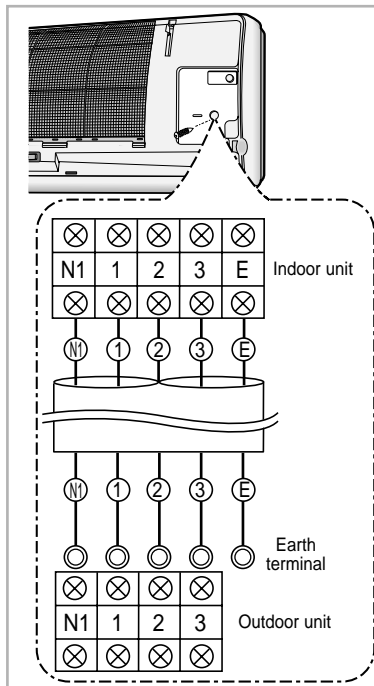


One electric cable must be connected to the outdoor unit:

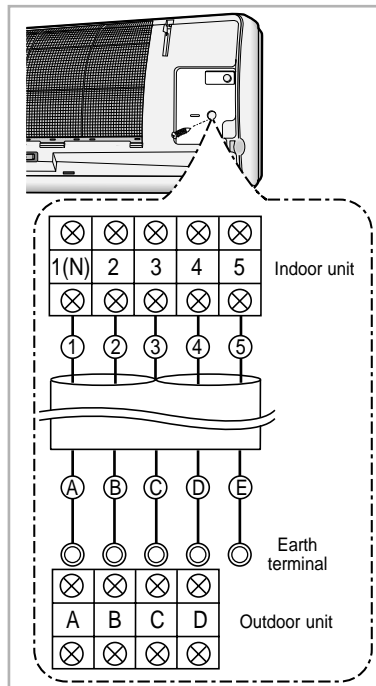
◆ The assembly cable connecting the indoor unit to the outdoor unit

- 1 Remove the terminal board cover on the side of the outdoor unit.
- 2 Connect the assembly cable to terminals.
 - Each wire is labelled with the corresponding terminal number.
- 3 Connect the earth wires to the earth terminals.
 - Refer to the page opposite for further details on how to check that earthing is correct.
- 4 Replace the terminal board cover, carefully tightening the screw.
- 5 Connect the power cable with the indoor unit.

► SH**YAA(B)



► The Others



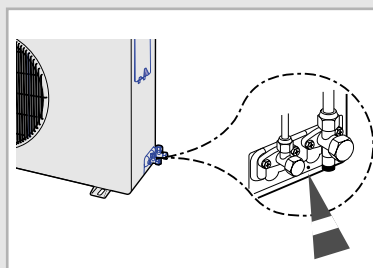
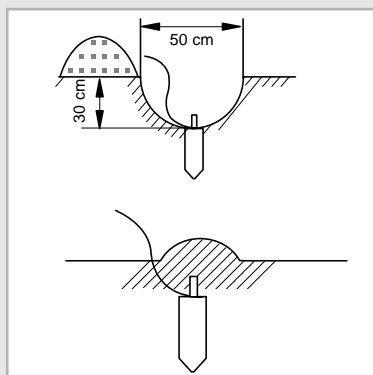
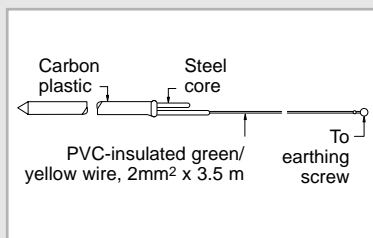
Checking Correct Earthing

If the power distribution circuit does not have an earth or the earth does not comply with specifications, an earthing electrode must be installed. The corresponding accessories are not supplied with the air conditioner.

- 1 Select an earthing electrode that complies with the specifications given in the illustration opposite.
- 2 Determine a suitable location for the earthing electrode:
 - ◆ In damp hard soil rather than loose sandy or gravel soil that has a higher earthing resistance
 - ◆ Away from underground structures or facilities, such as gas pipes, water pipes, telephone lines and underground cables
 - ◆ At least two metres away from a lightening conductor earthing electrode and its cable

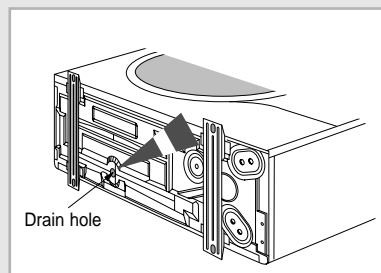
➤ The earthing wire for the telephone line cannot be used to earth the air conditioner.
- 3 Dig a hole of the size indicated in the illustration opposite, drive the earthing electrode into position and cover the top of the electrode with the excavated soil.
- 4 Install a green/yellow insulated earthing wire (Ø1.6 mm, section 2 mm² or greater):
 - ◆ If the earthing wire is too short, connect an extension lead, soldering the connection and wrapping it with insulating tape (do not bury the soldered connection)
 - ◆ Secure the earthing wire in position with staples

➤ If the earthing electrode is installed in an area of heavy traffic, its wire must be connected securely.
- 5 Carefully check the installation, by measuring the earthing resistance with an earthing resistance tester. If the resistance is above the required level, drive the earthing electrode deeper into the ground or increase the number of earthing electrodes.
- 6 Connect the earthing wire to the earthing screw on the air conditioner.

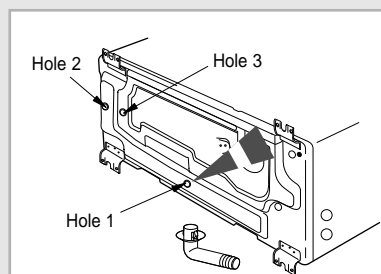


Installing and Connecting the Outdoor Unit Drain Hose

► SH**YAA(B)



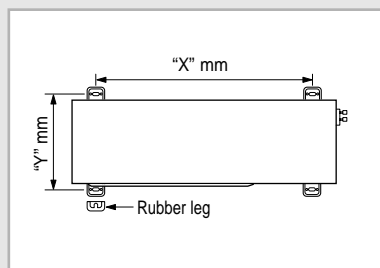
► The Others



When using the air conditioner in the heating mode, ice may accumulate. During de-icing, the condensed water must be drained off safely. Consequently, you must install a drain hose on the outdoor unit, following the instructions below.

- 1 Insert the drain plug into the hole 1 on the underside of the outdoor unit.
Close hole 3 with Cap Drain A.
Close hole 2 with Cap Drain B.
- 2 Connect the drain hose to the drain plug.
- 3 Ensure that the drained water runs off correctly and safely.

Fixing the Unit in Position



Model	X	Y
SH**YAA(B)	252	506
The Others	256	600

The outdoor unit must be installed on a rigid and stable base to avoid any increase in the noise level and vibration, particularly if the outdoor unit is to be installed close to a neighbour.

If it is to be installed in a location exposed to strong winds or at a height, the unit must be fixed to an appropriate support (wall or ground).

- 1 Position the outdoor unit so that the air flow is directed towards the outside, as indicated by the arrows on the top of the unit.
- 2 Attach the outdoor unit to the appropriate support using anchor bolts.
- 3 If the outdoor unit is exposed to strong winds, install shield plates around the outdoor unit, so that the fan can operate correctly.

✱ Certainly fix up its rubber leg, in order to prevent its vibration and noise.

Connecting Up and Purging the Circuit

The outdoor unit is loaded with sufficient R22 refrigerant for 5 metres of piping. The air in the indoor unit and in the pipe must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce to cooling/heating capacity and could lead to a malfunction. Refrigerant for air purging is not charged in the outdoor unit. Use Vacuum Pump as shown at the figure.

If you have used...	Then...
More than 5 metres of piping	"A"g of refrigerant R22 must be added for <u>each</u> extra metre.
Less than 5 metres of piping	The purge time is normal.

- 1 Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.
- 2 Referring to the illustration opposite, tighten the flare nut first manually and then with a wrench, applying the following torque.

Pipe	Outer Diameter	Torque (kg·cm)
Liquid refrigerant	6.35 mm(1/4")	160
Gas refrigerant	9.52 mm(3/8")	300
Gas refrigerant	12.70 mm(1/2")	500

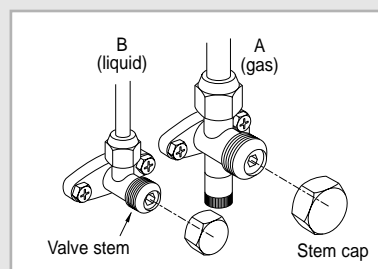
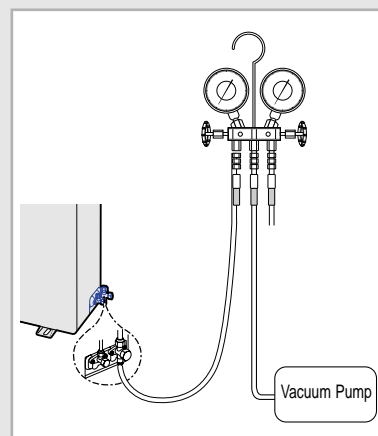
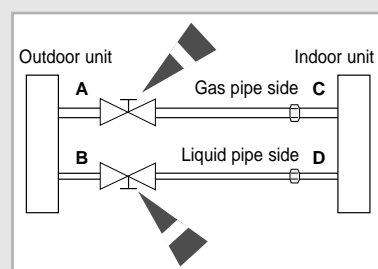
- 3 Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port as shown at the figure.
- 4 Open the valve of the low pressure side of manifold gauge counter-clockwise.
- 5 Purge the air from the system using vacuum pump for about 10 minutes.
 - Close the valve of the low pressure side of manifold gauge clockwise.
 - Make sure that pressure gauge show -0.1MPa(-76cmHg) after about 10minutes.
 - This procedure is very important in order to avoid gas leak.
 - Turn off the vacuum pump
 - Remove the hose of the low pressure side of manifold gauge.
- 6 Set valve cork of both liquid side and gas side of packed valve to the open position.
- 7 Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 18N·m with a torque wrench.
- 8 Check for gas leakage.
 - At this time, especially check for gas leakage from the 3-way valve's stem nuts, and from the service port cap.

Adding Refrigerant

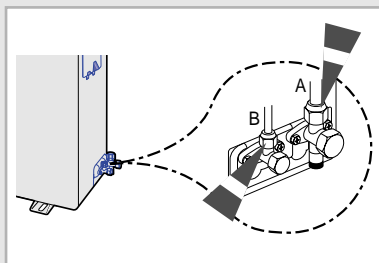
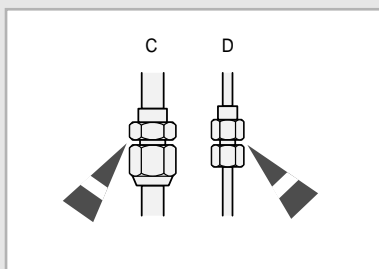
Refrigerant must be added if the piping measures more than 5 metres in length. This operation can only be performed by a qualified refrigeration specialist.

Refer to the Service Manual for more details on this operation.

Model	A
SH**YAA(B)	30
The Others	20



Performing Leak Tests

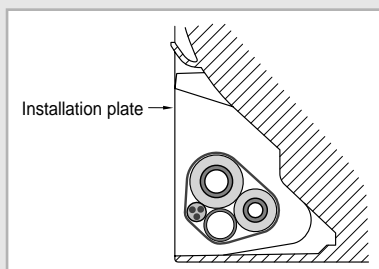
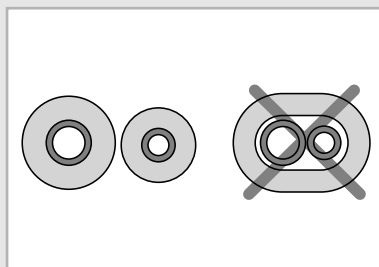


Before completing the installation (insulation of the cables, hose and piping and fixing of the indoor unit to the installation plate), you must check that there are no gas leaks.

To check for gas leaks on the...	Then, using a leak detector, check the...
Indoor unit	Flare nuts at the end of sections C and D.
Outdoor unit	Valves on sections A and B.

Placing the Indoor Unit in Position

Once you have checked that there are no leaks in the system, you can insulate the piping, hose and cables and place the indoor unit on the installation plate.



- 1 To avoid condensation problems, place heat-resistant polyethylene foam separately around each refrigerant pipe in the lower part of the indoor unit.
- 2 Wind insulating tape around the pipes, assembly cable and drain hose.
- 3 Place the resulting bundle carefully in the lower part of the indoor unit, making sure that it does not jut out from the rear of the indoor unit.
- 4 Hook the indoor unit on to the installation plate and move the unit to the right and left until you are sure that it is securely in place.
- 5 Finish wrapping insulating tape around the rest of the piping leading to the outdoor unit.
- 6 Using clamps (optionally supplied), attach the piping to the wall wherever possible.

Checking and Testing Operations


To complete the installation, perform the following checks and tests to ensure that the air conditioner is operating correctly.

- 1 Review all the following elements in the installation:
 - ◆ Installation site strength
 - ◆ Piping connection tightness to detect any gas leakages
 - ◆ Connection wiring
 - ◆ Heat-resistant insulation of the piping
 - ◆ Drainage
 - ◆ Earthing wire connection
 - ◆ Correct operations (follow the steps below)


- 2 Press the On/Off button.

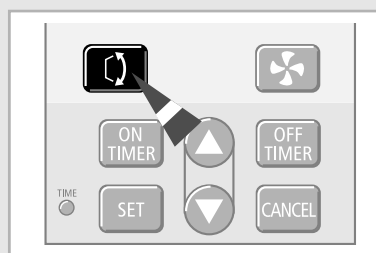
Result:

 - ◆ The indicator lights on the indoor unit flash at half-second intervals.
 - ◆ While the indoor unit opens, the indoor unit fan runs to start.

- 3 Press the  button.

Result: The outdoor unit operates in cooling or heating mode as following the room temperature.

- 4 Air flow direction Press the  button one or more times to set the blades to the 30° or 90° positions.



Installing the Remote Control Holder

The remote control is supplied with a plastic holder that can be fitted to the wall to hold the remote control when it is not being used.

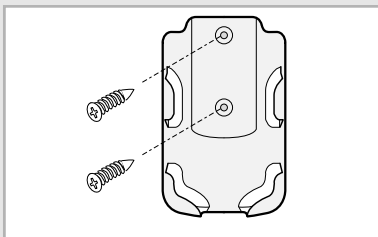
Choose a position where:

- ◆ *The signal from the remote control will not be blocked (by a curtain for example)*
- ◆ *The remote control is not exposed to direct sunlight or heat*
- ◆ *The remote control is at least one metre away from a television or stereo system to avoid generating any parasites*

To attach the holder to the wall, proceed as follows.

- 1 With a pencil, mark the positions of the two holes on the wall where the holder is to be installed.
- 2 Drill the two holes and insert plugs as required for the type of wall on which the holder is being installed.
- 3 Screw the holder into position.

Result: The owner can now slide the remote control in and out of the holder as required.

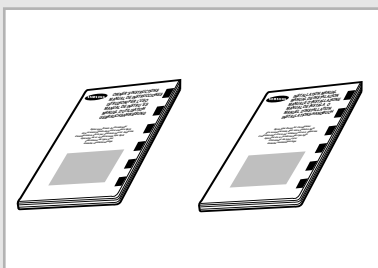


Explaining Operations to the Owner

Before leaving the premises on which you have installed the air conditioner, you should explain the following operations to the owner, making reference to the appropriate pages in the owner's instruction booklet.

- 1 How to start and stop the air conditioner.
- 2 How to select the operating mode and adjust the temperature and fan settings.
- 3 How to adjust the air flow direction.
- 4 How to set the timers.
- 5 How to remove and clean the filters.

Once the owner is happy with the basic operations, hand over the owner's instruction booklet and this installation manual for storage in a handy and safe place.



Technical Specifications

Model Indoor unit	Power Supply
ASH070VE / 090VE / 120VE	220-240V~, 50Hz
ASH071VE / 091VE / 121VE	
ASH074VE / 094VE / 124VE	
ASH075VE / 095VE / 125VE	
AQ07A1(A2)VE / 09A1(A2)VE / 12A1(A2)VE	
SH07YA0 / SH09YA0 / SH12YA0	
SH09ZV / 12ZV	
SH07YAA(B) / SH09YAA(B) / SH12YAA(B)	200-220V~, 50Hz
ASH070VD / 090VD / 120VD	
ASH071VD / 091VD / 121VD	
ASH074VD / 094VD / 124VD	
ASH075VD / 095VD / 125VD	
AQ09A1(A2)VB / 12A1(A2)VB	220V~, 60Hz

**THIS AIR CONDITIONER IS MANUFACTURED BY:
ESTE AIRE ACONDICIONADO HA SIDO FABRICADO POR:
QUESTO CONDIZIONATORE D'ARIA È PRODOTTO DA:
ESTE APARELHO DE AR CONDICIONADO É FABRICADO POR:
CE CLIMATISEUR EST FABRIQUE PAR:
DIESE KLIMAANLAGE IST FABRIZIERT VON:**

